

W5YI

America's Oldest Ham Radio Newsletter

REPORT

Up to the minute news from the world of amateur radio, personal computing and emerging electronics. While no guarantee is made, information is from sources we believe to be reliable.

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FCC Makes Upward Adjustment in Amateur RF Safety Threshold

The FCC has made another change in the RF safety rules which impacts the Amateur Service. A year ago (August 6, 1996) the FCC revised the Part 97 Rules to require an RF safety evaluation when the transmitter power exceeds 50 watts PEP.

The RF safety determination was required by the amateur station owner radiating more than 50 watts PEP regardless of the frequency band on which the operation occurred.

In response to a *Petition for Reconsideration* filed by the American Radio Relay League, the FCC's *Office of Engineering and Technology* (OET) has now changed the threshold frequency (when the "routine evaluation" requirement kicks in) to take into consideration the fact that RF exposure safety levels are frequency dependent. The most stringent RF safety standards are needed between 30 and 300 MHz.

Background

The *National Environmental Policy Act of 1969* (NEPA) requires agencies of the Federal Government to consider the impact of their actions on the quality of the human environment. Noting that it was widely accepted in the scientific world, the FCC in 1985 adopted the 1982 *American National Standards Institute* (ANSI) guidelines for use in evaluating the health effects of RF electromagnetic fields.

In 1992, ANSI adopted a new RF exposure standard (ANSI/IEEE C95.1-1992) to replace its 1982 standard. The new standard contained a

number of significant differences and was generally more restrictive in the amount of RF exposure permitted in the environment. To meet its responsibilities under NEPA, the FCC last year replaced the 1982 standard with the new ANSI/IEEE guidelines.

The FCC regulations generally require a station owner to determine whether an RF transmitter complies with new maximum permissible exposure (MPE) limits based on criteria published by the *American National Standards Institute* and the *Institute of Electrical and Electronics Engineers, Inc.* (ANSI/IEEE.) Applicants must certify at the time a radio license is issued, modified or renewed that the transmitting facility complies with the new RF safety standards.

The new guidelines incorporate two tiers of exposure limits based on whether exposure occurs in an occupational or "controlled" situation or whether the general population is exposed or exposure is in an "uncontrolled" situation. The ARRL opposed amateur radio operation being considered to be an uncontrolled environment. Their view was that the less stringent "controlled" environment "...should be safe for all." The FCC applied the controlled exposure limits to amateur radio operators and their families, but said the "General population/uncontrolled exposure [limits] will apply to situations in which the general public may be exposed or in which persons ...may not be made fully aware of the potential for exposure or can not exercise control over their exposure."

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For the first time, the FCC determined that amateur radio transmitters would also be subject to the "routine evaluation" requirements to insure that they complied with the guidelines. A new Part 97 rule (Sec. §97.13(c)) was added August 6, 1996, which required amateurs transmitting more than 50 watts to determine if their radiated signals exceeded the RF safety guidelines. This determination is called a "routine evaluation."

The new amateur rule refers to **Sec. § 1.1310 Radiofrequency radiation exposure limits** which contains the actual maximum permissible exposure (MPE) formulas. [See page 10.]

On August 25, 1997, the FCC's *Office of Engineering and Technology* (OET) released a Second Order in ET Docket 93-62 which responded to various *Petitions for Reconsideration* and amended certain aspects of the RF guidelines. OET also released an updated Bulletin No. 65, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields."

In the Order, the FCC affirmed the RF exposure limits that were previously adopted. Therefore, it is important to know that the RF safety limitations released last year were not changed. Several technical and legal issues were raised in the petitions and the FCC did make some amendments to the Rules.

Of interest to amateur radio operators was a revision to the 50-watt threshold for "routine evaluation" of amateur radio stations so that it reflects the manner in which the RF exposure limits change in the different amateur frequency bands. OET increased the threshold transmitter PEP power levels on bands lower than 10 meters and higher than the 70 centimeter (420-450 MHz) band since they do not fall in the frequency area in which the human body absorbs the most RF energy.

Some petitioners wanted the new RF guidelines to take effect immediately, others asked for additional time. The FCC decided to extend the transition period to October 15, 1997. "The transition period for the Amateur Radio Service only, will remain the same, and will end on January 1, 1998." Here is what the FCC said in the August 25, 1997, document that applies to the Amateur Service. [And we Quote from the Order]

Amateur Radio Service (ARS)

Historically, all licensees and applicants in the ARS have been categorically excluded from performing routine environmental evaluations for compliance with our RF exposure guidelines. In the [First] *Report and Order*, however, we concluded that there was a potential for amateur stations to cause RF exposure that would exceed our new limits. Accordingly, we decided to require amateur station licensees to:

- 1) conduct a routine environmental evaluation if they transmit using more than 50 watts;
- 2) take action to prevent human exposure to excess-

ive RF electromagnetic fields if the routine environmental evaluation indicates that our limits could be exceeded;

- 3) demonstrate their knowledge of our guidelines through examinations; and
- 4) indicate in their applications for new licenses and renewals that they have read and understand our rules for limiting RF exposure.

We also amended our rules to require the amateur radio operator license examination question pools to include questions concerning RF safety at amateur stations, requiring an additional five questions on RF safety within each of the three written examination elements. [This meant that the VEC's Question Pool Committee had to come up with a minimum of 150 new questions since question banks must contain a minimum of ten times the number of questions that will be used in any one examination.]

In its petition, the ARRL claims that the 50-watt threshold we adopted in the *Report and Order*, above which amateur radio operators must evaluate their stations, is arbitrary and inappropriate. The ARRL points out that this threshold does not consider important factors, such as frequency, antenna height, antenna gain, emission mode, or duty cycle.

The ARRL also notes that many other radio services, including some with higher duty cycles, are categorically excluded from performing routine evaluations even though they may operate with similar or higher power. The ARRL requests that the 50-watt threshold be modified to incorporate power levels contained in its petition, which vary by frequency, or else be increased to at least 150 watts transmitter power output if all parts of the antenna are located at least 10 meters from any area of uncontrolled exposure.

Alan Dixon, an amateur radio operator, maintains that it is burdensome and unnecessary for amateur radio operators to perform routine environmental evaluations and, when necessary, EAs [Environmental Assessments.] Mr. Dixon states that the amateur radio community utilizes long-established customs of limiting duration of transmissions, using minimal power levels and establishing antenna installations which maximize propagation while inherently limiting unintended exposures. He believes that amateur operators should continue their traditional self-policing, free of "rigid overly-specific RF radiation parameters," given the "utter lack of evidence of detrimental effects thereby."

FCC Decision.

In the [First] *Report and Order*, we noted that amateur stations can transmit with up to 1,500 watts peak envelope power on a wide range of frequency bands from 1,800 kHz to over 300 GHz. We also noted that amateur stations are not subject generally to restrictions

→→→→→ Continued on Page 8, RF Safety

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GAY/LESBIAN RADIO CLUB SNUBBED!

A copyrighted article appearing in Sacramento, California's *MGW Newspaper* tells how the Rainbow Amateur Radio Association of Chesterland, Ohio had their paid advertising refused by *World Radio News* magazine. MGW - which stands for "Mom, Guess What" - bills itself as the city's first Gay/Lesbian newspaper. The twice-a-month publication was founded in 1978. The Rainbow Amateur Radio Association chapter apparently wanted to reach out to other similarly inclined Amateur Radio enthusiasts.

World Radio returned the \$30.00 check with a note stating that "We feel amateur radio organizations should emphasize common aspects of the hobby, not common aspects that have no relation to the hobby."

The copyrighted story by staff writer, Joy Fisher noted that *World Radio* accepted ads from an organization for Jewish amateurs and another for medically-oriented amateurs. "When queried how Rainbow's ad differed, Helen Noble, the wife half of the husband-wife team who have published the monthly magazine for 25 years, said "Those ads don't have anything to do with sexual orientation."

The caller was referred to her husband. Armond Noble, N6WR who "...asserted his right to accept or reject any ads he chose to" said his reason for rejecting the Rainbow ad was that "Your actions are against my religious beliefs." Here is how the Rainbow ad read:

"Rainbow Amateur Radio Association is an international club for gay/lesbian hams and their friends. Weekly H.F. expeditions, chapters, awards programs and certified VE team, top quality newsletter, uncensored listserv E-mail: rar@en.com. Web page: <http://www/telecen.com.rara/> or write PO Box 191, Dept. "C", Chesterfield, OH 44026-0191 for information leaflet and/or application."

Rainbow ARA split off from another gay radio group, the Lambda Amateur Radio Club, when that group sued ARRL's QST magazine for refusing to publish its ad. Rainbow members "...objected to Lambda's suit because of a more conservative philosophy regarding filing law suits." The state of Connecticut has an anti-discrimination law and "...QST settled the suit, agreeing not only to publish the rejected display ad six times at no cost, but also paying the plaintiff's attorney's fees, and, in addition putting into place a written anti-discrimination policy covering both ads and QST's employees. ...QST not only published Lambda's ad, but also an ad placed by Rainbow," the article said.

Rainbow is now contemplating contacting the *Lambda Legal Defense and Education Fund* for assistance. This is the same public interest law firm (not affiliated with the Lambda Amateur Radio Club) that sued the ARRL. RARA president, John W. Whitman is reportedly presently polling his club. He also said he would give the *World Radio* publisher one more opportunity to reconsider his rejection of Rainbow's ad.

AMATEUR RADIO STATION CALL SIGNS

...sequentially issued as of the first of September 1997:

Radio District	Group A Extra	Group B Advanced	Group C Tech/Gen.	Group D Novice
0 (*)	AB0GC	KI0JT	(***)	KC0BXJ
1 (*)	AA1SP	KE1II	N1ZRK	KB1CEY
2 (*)	AB2EB	KG2ML	(***)	KC2CIU
3 (*)	AA3QB	KF3AH	N3ZYI	KB3BUX
4 (*)	AF4FF	KU4KG	(***)	KF4TVD
5 (*)	AC5NS	KM5LY	(***)	KD5CDL
6 (*)	AD6CE	KQ6RM	(***)	KF6NLV
7 (*)	AB7WH	KK7JP	(***)	KC7VZN
8 (*)	AB8BC	KI8DQ	(***)	KC8ILA
9 (*)	AA9UV	KG9LF	(***)	KB9RJB
N. Mariana	NH0B	AH0AY	KH0GT	WH0ABI
Guam	(**)	AH2DE	KH2SI	WH2ANU
Hawaii	AH7V	AH6PD	KH7GC	WH6DEH
Am.Samoa	AH8O	AH8AH	KH8DK	WH8ABF
Alaska	AL0F	AL7QU	KL0KG	WL7CUM
Virgin Isl.	(**)	KP2CL	NP2JR	WP2AII
Puerto Rico	NP3M	KP3BC	NP3QM	WP4NNL

* = All 1-by-2 & 2-by-1 call signs have been assigned.

** = All 2-by-1 call signs have been assigned.

*** = Group "C" (N-by-3) call signs have now run out in all but the 1st and 3rd call district.

Note: New prefix numerals now being assigned in Puerto Rico (KP3/NP3), Hawaii (AH7/KH7) and Alaska (AL0/KL0)

[Source: FCC Amateur Service Database, Washington, DC]

NEW AND UPGRADING AMATEUR STATISTICS

For the Month of August 1995, 1996 & 1997

License Class	New Amateurs			Upgrading Amateurs		
	1995	1996	1997	1995	1996	1997
Novice	41	52	42	5	0	0
Technician	2154	1632	848	11	0	2
Tech Plus	255	130	87	304	316	233
General	113	15	7	445	289	259
Advanced	22	3	2	266	232	232
Extra Class	16	5	1	321	176	145
Club/Empty	232	59	54	9	0	0
Total:	2833	1896	1041	1361	1119	871
Decrease:		(33.1%)	(45.1%)		(17.8%)	(22.2%)

ABOVE LICENSING FIGURES ARE SHOCKING!

They show that the number of new and upgrading radioamateurs **are drastically reduced** from previous years. Part of the reason is the introduction of a new and expanded Element 2 and 3A question pool in July 1997. The statistics are developed by downloading and customizing the FCC's Amateur Service database. Each record reveals when amateurs are first licensed (shown with an "A") and upgrades (indicated with a "B"). The records are then accessed over a specified date range.

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■ The National Weather Service (NWS) wants to automatically retransmit NOAA weather radio alerts over ham radio repeaters. They have requested the support of the ARRL. NWS says that some of these warnings are usually only valid for a short period of time ...such as 10 minutes before touchdown of a tornado.

NWS points out that the FCC requires broadcast and cable systems to automatically interrupt programming to retransmit certain EAS (emergency alert system) warnings when the control point is unattended.

Although the NWS warnings are not a mandatory retransmit, they comprise more than 80% of all EBS/EAS activations. The NWS maintains that this constitutes a precedent for automatic retransmission of federal gov-

ernment alerts at unattended stations to the public.

"If it is an FCC priority to retransmit weather warnings on commercial broadcast stations as a public service, why should amateur radio be excluded from also providing this free public service? ...especially when one of its goals is providing emergency communication."

During emergencies the federal government (Federal Emergency Management Agency) regularly conducts two way communication with amateurs on amateur bands. FEMA holds several amateur call signs issued specifically for this purpose (such as KF1EMA.) The NWS contends that retransmitted weather alerts are no different from FEMA communicating with hams on amateur frequencies during emergencies.

AMATEUR RADIO GROWTH OVER THE PAST TEN YEARS

<u>Extra</u>	<u>Advan.</u>	<u>General</u>	<u>Tech.+</u>	<u>Tech.</u>	<u>Novice</u>	<u>Total</u>	<u>Increase</u>
<u>Year ending August 31, 1986</u>							
40455	98294	116944	86025		79359	421077	+2.3%
9.5%	23.5%	27.9%	20.3%		18.9%	100.0%	
<u>Year ending August 31, 1987</u>							
42914	98114	114737	90675		83238	429678	+2.0%
10.0%	22.8%	26.7%	21.1%		19.4%	100.0%	
<u>Year ending August 31, 1988</u>							
45909	98282	113068	98944		80502	436705	+1.5%
10.5%	22.5%	25.9%	22.7%		18.4%	100.0%	
<u>Year ending August 31, 1989</u>							
49275	101311	116289	111708		84589	463172	+6.1%
10.6%	21.9%	25.1%	24.1%		18.3%	100.0%	
<u>Year ending August 31, 1990</u>							
52700	104222	119038	124778		90932	491670	+6.2%
10.7%	21.2%	24.2%	25.4%		18.5%	100.0%	
<u>Year ending August 31, 1991</u>							
56242	106990	121832	127024	21205	96387	529680	+7.7%
10.8%	20.9%	23.8%	21.7%	4.0%	18.8%	100.0%	
<u>Year ending August 31, 1992</u>							
60405	109404	124559	129310	55899	98534	578111	+9.1%
10.5%	18.8%	21.6%	22.4%	9.7%	17.0%	100.0%	
<u>Year ending August 31, 1993</u>							
63977	111890	126666	131638	85411	101017	620599	+7.3%
10.3%	18.0%	20.4%	21.2%	13.8%	16.3%	100.0%	
<u>Year ending August 31, 1994</u>							
67681	114666	128729	134028	117345	90060	661509	+6.6%
10.2%	17.3%	19.5%	20.3%	17.7%	15.3%	100.0%	
<u>Year ending August 31, 1995</u>							
71900	117398	130021	139529	145193	97468	701509	+6.0%
10.3%	16.7%	18.5%	19.9%	20.7%	13.9%	100.0%	
<u>Year ending August 31, 1996</u>							
74149	115518	128180	149244	156909	89833	713833	+1.8%
10.4%	16.2%	18.0%	20.9%	22.0%	12.5%	100.0%	
<u>Year ending August 31, 1997</u>							
75681	113398	125414	148392	176978	81982	721835	+1.1%
10.5%	15.7%	17.3%	20.7%	24.5%	11.3%	100.0%	

(All figures provided by FCC Licensing Facility, Gettysburg, PA)

Amateur Radio Growth Continues to NOSEDIVE!

Up until August 1995, the Amateur Service had been expanding at an average rate of 7%. It came to a screeching halt last year when the growth rate slipped to 1.8%. It is even less in 1997.

- 45% of all amateurs now hold either a Tech Plus or a Technician ham ticket - the highest percentage ever. (It was 43% last year and 41% in 1995.)
- The Amateur Service grew by only 1.1% (8,002) last year vs 12,313 in the year ending August 31, 1996 - or 1.8%. Note that during five year period ending August 31, 1995 that the Amateur Service grew by about 50,000 per year.
- The total number of Codeless Technician Amateurs, however, grew by 12.8% (or 20,069.)
- The total number of Extra, Advanced, General and Novice (the ones that go to trade shows and buy the high dollar HF rigs) decreased by 2.2%.
- On the next page, we are listing the total number of Amateurs by license class and state for the year ended August 31, 1997 - with comparable figures for the prior year.
- Figures are for individual Amateur Radio stations only and do not include approximately 2,500 Club, Military Recreation and RACES stations.

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Prior to the No-Code Technician license, approximately 60% of all amateurs held a General, Advanced or Amateur Extra Class license. This percentage is now down to 43.5%. The table below shows that growth in most states continues to decrease dramatically! The No-Code Technician license continues to increase, however. There are now 20,000 more Code-less Techs (and 12,000 less amateurs holding a license class that requires Morse code) than a year ago.

AMATEUR SERVICE GROWTH REPORT - SEPTEMBER 1, 1996 vs SEPTEMBER 1, 1997

STATE EXTRA	ADVANCED		GENERAL		TECH PLUS		TECHNICIAN		NOVICE		TOTAL ALL CLASSES			% INCREASE				
	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997	1995	1996	1997	'95 %	'96 %	'97%
AL	1169	1186	1706	1684	1784	1779	2321	2301	2846	3210	923	825	10374	10749	10985	7.4%	3.6%	2.2%
AK	330	345	521	509	641	614	571	577	738	940	405	357	3175	3206	3342	6.4%	1.0%	4.2%
AZ	1561	1624	2584	2557	2665	2647	3089	3101	4102	4593	1164	1051	14604	15165	15573	9.9%	3.8%	2.7%
AR	767	787	1064	1059	1074	1062	1342	1350	1907	2170	577	526	6458	6731	6954	10.3%	4.2%	3.3%
CA	8956	9031	15810	15377	16288	15796	23580	23084	28704	32271	15786	14700	107306	109124	110259	6.4%	1.7%	0.9%
CO	1274	1318	2133	2103	2107	2064	2439	2450	2624	2991	1200	1101	11453	11777	12027	6.0%	2.8%	2.1%
CT	1142	1144	1531	1488	1915	1836	1844	1826	1462	1627	1559	1417	9433	9453	9338	3.9%	0.2%	(1.2%)
DE	201	207	231	235	295	283	330	337	265	300	191	168	1487	1513	1530	4.6%	1.7%	1.1%
DC	81	73	95	89	125	125	72	69	65	68	64	59	527	502	483	(.8%)	(4.7%)	(3.8%)
FL	4461	4584	7965	7869	9366	9261	8434	8386	7150	8009	6350	5829	43149	43726	43938	5.9%	1.3%	(0.5%)
GA	1613	1651	2575	2569	2615	2601	3235	3269	3236	3685	1389	1282	14288	14663	15057	6.8%	2.6%	2.7%
HI	323	340	507	496	557	541	712	696	663	725	658	593	3380	3420	3391	4.9%	1.2%	(0.8%)
ID	345	365	595	602	718	712	781	803	1047	1307	374	327	3702	3860	4116	9.9%	4.3%	6.6%
IL	2671	2706	4140	4013	4716	4572	5159	5081	4854	5405	3262	2919	24681	24802	24696	4.1%	0.5%	(0.5%)
IN	1558	1566	2389	2338	2764	2734	3596	3578	3439	3830	1877	1715	15408	15623	15761	5.6%	1.4%	0.9%
IA	755	771	1421	1388	1482	1424	1252	1238	1248	1361	979	910	7115	7137	7092	4.1%	0.3%	0.6%
KS	751	765	1167	1147	1550	1503	1515	1533	1698	1938	922	846	7613	7603	7732	6.8%	(0.1%)	1.7%
KY	918	960	1226	1220	1452	1448	1858	1860	2347	2632	1102	1025	8525	8903	9145	8.1%	4.4%	2.7%
LA	850	861	1344	1300	1383	1320	1496	1475	1626	1774	831	757	7513	7530	7487	4.8%	0.2%	(0.6%)
ME	511	516	719	691	1029	1011	825	836	909	1043	523	471	4410	4516	4568	6.7%	2.4%	1.2%
MD	1516	1540	2263	2197	2226	2167	2416	2396	2416	2483	1373	1274	12029	12051	12057	4.4%	0.2%	0.0%
MA	2107	2119	2695	2613	3285	3188	3354	3293	2576	2861	2123	1977	16166	16140	16051	3.2%	0.2%	(0.6%)
MI	2293	2340	3609	3564	4271	4139	4572	4528	4679	5251	2367	2088	21451	21791	21910	5.4%	1.6%	0.5%
MN	1204	1221	1995	1975	2295	2219	2179	2164	2165	2456	1183	1046	10852	11021	11081	5.4%	1.6%	0.5%
MS	512	534	815	819	859	843	918	912	1194	1357	497	460	4634	4795	4925	6.5%	3.8%	2.7%
MO	1449	1503	2246	2198	2595	2550	2516	2510	2788	3277	1416	1241	12699	13010	13279	6.3%	2.5%	2.1%
MT	314	328	472	478	578	570	523	543	729	878	336	303	2831	2952	3100	9.6%	4.3%	5.0%
NE	400	408	773	758	957	932	826	813	698	821	444	398	4103	4098	4130	5.5%	0.1%	0.8%
NV	425	457	703	705	839	832	825	859	1082	1266	341	316	3991	4215	4435	8.9%	5.6%	5.2%
NH	676	705	760	741	954	940	1057	1065	990	1119	533	494	4870	4970	5064	6.5%	2.1%	1.9%
NJ	2218	2254	3146	3056	3441	3311	3806	3716	2854	3102	2441	2245	18017	17906	17684	3.7%	(0.6%)	(1.2%)
NM	626	619	941	923	902	855	931	941	1429	1634	326	292	4994	5155	5264	9.3%	3.2%	2.1%
NY	3888	3895	5715	5531	6670	6466	7455	7360	7075	7777	6194	5457	37316	36997	36486	3.6%	(0.8%)	(1.4%)
NC	1920	2029	2930	2930	3103	3091	3634	3655	4354	4907	1889	1837	17083	17830	18449	8.2%	4.4%	3.5%
ND	167	163	245	242	372	362	348	349	354	397	229	192	1697	1715	1705	7.1%	1.1%	(0.6%)
OH	3218	3311	4946	4841	5542	5423	7842	7740	6957	7741	3690	3418	31901	32195	32474	5.2%	0.9%	0.9%
OK	965	978	1512	1481	1468	1427	1944	1933	2508	2822	1020	916	9096	9417	9557	7.5%	3.5%	1.5%
OR	1298	1341	2179	2148	2728	2663	2655	2681	2750	3172	1435	1274	12685	13045	13279	6.7%	2.8%	1.8%
PA	3115	3155	4491	4377	5161	5010	5461	5461	4558	5111	3217	2926	25917	26003	26040	4.8%	0.3%	(0.1%)
RI	353	365	370	353	524	503	633	620	391	435	383	352	2618	2654	2618	4.3%	1.4%	(1.4%)
SC	728	760	1107	1101	1354	1345	1403	1416	1403	1624	624	580	6382	6624	6826	7.9%	3.8%	3.0%
SD	178	184	314	308	371	357	281	287	297	343	164	147	1582	1605	1626	4.5%	1.5%	1.3%
TN	1553	1593	2378	2327	2314	2309	3232	3244	3286	3690	1351	1228	13721	14114	14391	6.6%	2.9%	2.0%
TX	4852	5000	7592	7473	7667	7530	8824	8785	9645	10914	4021	3627	41585	42551	43329	6.6%	2.3%	1.8%
UT	504	523	835	833	768	766	1722	1742	3041	3514	697	641	7086	7567	8019	12.7%	6.8%	6.0%
VT	266	268	333	327	434	422	427	427	538	623	210	195	2154	2208	2262	9.3%	2.5%	2.4%
VA	2161	2190	3085	3039	3064	3036	3497	3523	3450	3888	1876	1724	16791	17133	17400	6.2%	2.0%	1.6%
WA	2473	2525	3786	3758	4478	4423	5211	5227	5861	6680	2838	2555	23994	24647	25168	7.4%	2.7%	2.1%
WV	602	624	739	729	944	938	1280	1300	1927	2213	738	659	6054	6230	6463	8.3%	2.9%	1.1%
WI	1208	1225	1852	1820	2160	2109	2034	2034	2350	2694	1169	1058	10570	10773	10940	5.9%	1.9%	1.6%
WY	188	188	240	234	289	291	318	313	417	468	205	161	1611	1657	1655	6.3%	2.9%	(0.1%)
GU	63	55	50	48	65	64	105	116	192	221	164	112	597	639	616	18.7%	7.0%	(3.6%)
PR	286	305	587	584	782	796	2367	2381	728	858	4100	3811	8696	8850	8735	2.1%	1.8%	(1.3%)
VI	56	53	53	51	85	80	60	58	75	75	40	38	359	369	355	1.1%	2.9%	(3.8%)
Other	130	133	88	102	109	124	137	150	376	427	63	62	762	903	998	28.9%	17.1%	10.5%
96:	74149	115518	128180	149244	156909	89833	701509	713833	721835	6.0%	1.8%	1.1%						
%	10.4%	16.2%	18.0%	20.9%	22.0%	12.5%	100%	100%	100%									
97:	75681	113398	125414	148392	176978	81982												
%	10.5%	15.7%	17.3%	20.7%	24.5%	11.3%	100%	100%	100%									
% Inc.	+2.1%	(1.8%)	(2.2%)	(0.6%)	+12.8%	-(8.7%)												

(*** = Other includes U.S. small island possessions and APO/FPO addresses.)

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CUTTING EDGE TECHNOLOGY

■ **Wireline "cable" is being touted as the Internet delivery method of the future!** Bill Gates (Microsoft CEO) invested \$1 billion in cable operator "Comcast" to speed the convergence of the TV and the personal computer. The investment gives Microsoft an 11.5% stake in the nation's No. 4 cable TV company.

Oracle Corp. has big plans for "NC enhanced television." The slimmed down Network Computer was invented by Oracle. And as mentioned previously, Microsoft paid \$425 million for the WebTV Network so viewers can surf the Internet from their TV sets.

The cable industry itself is pushing their "@Home Network" which went public in July. Investors made that firm worth \$2.4 billion even though "@ Home" lost nearly \$23 million on revenue of only \$2 million from 35,000 subscribers. (Its shares more than doubled the \$10.50 offering price.) Another new cable TV/web service is Time-Warner Cable's "Road-Runner Network."

The big selling point of cable modem technology is speed ...up to 300 times faster than a 28.8 kbs modem.

COMPUTER INFO

■ **Apple Computer is stopping Mac look-alikes by buying the largest maker of Macintosh clones (for \$100 million)** and denying new Apple technology to other clone makers (especially Motorola.) The original thinking was that Mac clones would enlarge the market for Macintosh software. But that is not what happened! Macintosh PC's continued to lose market share while Power Computing sales soared! The purchase of Power Computing will also permit Apple to sell Macs direct. Apple also said it is considering making PCS that run Windows software.

INTERNET NEWS

■ **"The Backward Pages" gets my vote for the least useful site on the Internet!** The site asks you to type in the URL of any Web page, and then loads that page backwards (mirror-image) so that it reads from right to left. Claims to be great for dyslexics. URL: <<http://smeg.com/backwards/>>

■ **"RocketMail" is a free, private, secure e-mail service.** But unlike "Juno.-com", it is web-based. The web itself provides the e-mail software. You can access your mail from anyplace with a web browser. RocketMail has a spell checker, an address book, supports attachments and has an "anti-spam" control feature. Known spammers are automatically blocked. But RocketMail and Juno are similar in one respect. They are both ad supported. See <<http://www.rocketmail.com>>

■ **Headquartered in San Jose, CA, the Internet Shopping Mall is the world's biggest web commerce site.** They have a whopping 27,000 stores online? The mall has 12 main "floors" and hundreds of "departments." Nearly a million visitors go there monthly. A frame-enabled return feature lets visitors go back to the mall corridor without using the back button. The mall's revenues come from commissions obtained through its back-end "OrderEasy Secure Electronic Commerce Service." <<http://www.internetmall.com>>

WASHINGTON WHISPERS

■ **The FCC has shut down an unlicensed FM broadcast radio station** operating on 89.9 MHz from the apartment of James Pierrilus in Fort Walton Beach, FL. The station operator, voluntarily handed over his transmitter to the FCC officials, thereby ending the operation. He could have been fined \$11,000 or jailed for up to one year or both.

Victor Pessaro of Melbourne, FL had his *Petition for Reconsideration* seeking review of a \$750 FCC fine denied. Pessaro had been found operating out of the CB band with high power ...and failed to allow an FCC inspection.

The FCC also affirmed the \$1,600 fine against **Robert J. Powers of Puyallup, WA** for operating a radio station on 27.455 MHz - a frequency not allocated to the Citizen's Radio Service.

■ **This month, the Senate is preparing to confirm four new commissioners, including a new chairman,** the FCC's general counsel Bill Kennard.

Outgoing Chairman Reed E. Hundt talked about his four years at the FCC in a speech last week before the IEEE. Hundt said: "When I started as chairman at the end of 1993 there were 30,000 Internet domain names; now there are 1.6 million.

"There was no such thing as a browser; now every cp (that's computer per-

son) rides the info highway.

"The small handful of Internet access providers charged by the minute, with costs reaching triple figures per month; now \$19.95 buys you all the bits you can eat and ISP's (intrepid sellers of progress) number 4000 and counting upwards.

"The law supported monopolies and regulation in telco and cable; now the FCC has got a new law that backs competition and deregulation in all communications markets -- which, I remind you, are almost three times the size of the software market." Hundt said he particularly enjoyed "...the Internet stuff..."

AMATEUR RADIO

■ **Check out Ham Trader's web site.** They have links to just about everything associated with Amateur Radio. Also a huge classified ad section. Location is: <<http://www.hamtrader.com>>

■ **Jim Carson, WK2K of Ithaca, NY is running for ARRL Director of the Atlantic Division.** One of his platform planks is the abolition of Morse code as a licensing requirement. "Morse will live on in ham radio regardless of whether it is a testing requirement or not - simply because it is fun for those who enjoy it," he said. "However, to all other radio services, it is dead."

"The league solicited donations (in addition to dues) earmarked for the exclusive use of the international preservation of frequencies. Any use of those funds for browbeating other countries into maintaining the cw testing is a clear misappropriation of funds." Jim said in a recent letter to ARRL VP, Dave Sumner, K1ZZ.

"I oppose futilely wasting limited ARRL funds to maintain cw testing for an international treaty requirement or for hampering those legitimately handicapped from enjoying HF phone operation. ...I do sympathize with those who object to the cheaters who use a false doctor's statement to circumvent the current legal cw testing requirement. But I would rather see ten cheaters get licenses than one handicapped person [kept] from getting a meaningful license. The real solution is to have the FCC handle exemptions since the local VE team is not set up to handle all the legal ramifications."

"If I am out of step with what the membership wants, they will pull the lever for the other person - that's called democracy," Carson said.

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COMMENTS ON PRIVATIZED RADIO ENFORCEMENT

RM-9150 is a *Petition for Rulemaking* filed on March 28, 1997 by the American Radio Relay League which seeks to create a streamlined, privatized enforcement process for rule violations in the Amateur Service. The new proposed procedures would only address serious malicious interference cases.

Under the proposal, the pre-trial administrative work and presentation of the case to the FCC's Administrative Law Judge (ALJ) would be handled by the ARRL instead of the FCC's Wireless Telecommunications Bureau. The evidence gathering would be prepared by the ARRL's Amateur Auxiliary, a volunteer monitoring corps authorized by (1982) Public Law 97-259 and administered by the League's Section Managers. The Amateur Auxiliary has a formal agreement with the FCC to monitor the airwaves for rules violations.

This past week, two contrasting public comments were received by the FCC. They did agree on one point, however. The ARRL should not be the only group authorized to bring interference enforcement cases directly to the FCC's judicial department.

KPRA SUPPORTS PRIVATIZED ENFORCEMENT

The Keller Peak Repeater Association (KPRA) supports the new procedure but opposes the limitation that only members of the ARRL's Amateur Auxiliary be allowed to tender cases to the FCC's Administrative Law Judge. KPRA, which is currently involved in malicious interference to its coordinated repeater, wants the Commission to "...act expeditiously to adopt the proposed procedures and to make those procedures available to any amateur licensee. ...There is simply no valid reason in law or fact for this [ARRL only] limitation."

The well done comments were professionally completed by Attorney Richard L. Anglin, Jr., N6KUB of the law firm of Anglin & Giaccherini, of Del Mar, California.

KB9FO OPPOSES ARRL PETITION

Henry Ruh, KB9FO of Crown Point, Indiana (and editor of *ATV Quarterly*) filed scathing comments in opposition. Ruh said the proposal amounted to the creation of an ARRL private sector radio police force. "Such action, if adopted by the Commission, would likely lead to serious breach of Government enforcement obligations, and create a system of arbitrary capricious, superfluous and egregious actions and counter actions, promulgated for individual and political agenda of League Officials, individuals and groups...."

"The last thing Ham Radio needs is a collection of self righteous self appointed 'Barney Fife' and 'Deputy Dawg' radio Gestapo agents, armed with Government approval and their own interpretation of the FCC's rules, performing interdiction, investigation, invasion of privacy, and violation of Constitutional rights, covered by Federal immunity as performing quasi Government work, with few limitations, no legal recourse, no individual responsi-

bility, and no control through disinterested third party adjudication."

"The ARRL's bringing of this new Petition before the FCC is either a statement that the OO [Official Observer] program is a failure, or a means to a further end, the ARRL's control of Ham Radio in new ways...."

"The ARRL states that the League would administer the complaint and compliance portion without notice to the station... In the scenario of the ARRL's petition, the ARRL performs the services of the FBI, to use it's deputized agents to spy and gather secret files on individual stations. If and when the ARRL has gathered enough evidence (in its own judgement) to present a case to the Government, or to act on its own under Government auspices, only then is the station informed that such a file exists. ...the actions constitute Police Action, and a violation of Federal Constitutional guarantees that prevent the invasion of privacy, trespass, and the accumulation of secret 'hit lists' by Government agencies. The ARRL can offer no guarantee nor prevent abuse of their proposed system...."

"The value to having a Federal employee perform the work of compliance and complaint adjudication is, as with any legal system, the adjudicator has no personal interest to conflict with the case brought before it. Such is not the circumstances when the parties all have an inherent state in the outcome of the process, and therefore have a built in bias and self interest agenda, regardless of the specifics of each case so presented."

"The ARRL would promote itself as sole judge, jury and arbiter in matters which reflect on ARRL policy, band plans, business and personal agendas. One need only look to the creation of the NFCC (National Frequency Coordination Council) created, incorporated and funded by the ARRL, to see the avarice, self serving and political agendas of the individuals elected to operate and direct the actions of this self appointed group."

"Further, the ARRL petition, sets up a system which interdicts and usurps the individuals right to directly petition the Government, and sets the ARRL as a quasi Government agency, with its ownrules, policies and procedures, with no recourse except expensive civil suit in Federal Court, which may yet be prevented under the latest Federal Law, which prevents such action against individuals and groups who perform Government work as volunteers."

"In fact, the entire ARRL proposal is a sham and an abuse of the FCC's processes. ...First the ARRL creates the problem, then the ARRL creates the petition to administer its own program to solve the problem it created! The Fox guarding the hen house, and another built-in conflict of interest for the ARRL."

"The ARRL has failed to make a convincing case that the ARRL alone requires special powers and privileges to solve an exceedingly microscopic problem. The ARRL has failed to express in concrete terms, how anyone would benefit from its actions under the special power and privileges it proposes."

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RF Safety Rules Amended - Continued from Page 2

on antenna gain, antenna placement, duty cycles, and other relevant exposure variables and, as a result, the possibility of human exposure to RF electromagnetic fields in excess of the guidelines could not be completely disregarded. Therefore, we came to the conclusion that a categorical exclusion for all amateur stations is not justified. We continue to believe that is the case. However, we now conclude that a uniform 50-watt categorical exclusion threshold, as adopted in the *Report and Order*, would cause many amateur station licensees to perform unnecessary routine environmental evaluations.

The ARRL is correct that our MPE limits are frequency dependent. Because amateur stations are permitted to transmit in frequency bands covering a wide range of frequencies, the MPE limits that might apply to any particular amateur station operation can vary dramatically.

For example, at 1,897 kHz (in the 160 meter band) the MPE limit for general population/uncontrolled exposure is 50 mW/cm². At 29 MHz (in the 10 meter amateur band) the MPE limit for general population/uncontrolled exposure is about 0.2 mW/cm².

The ARRL argues, quite correctly, that by applying a single power threshold above which a routine environmental evaluation must be performed, the variations that occur in the RF exposure limit as the station transmitter frequency changes are disregarded. The ARRL proposes, in its petition, that we scale the power threshold to match the RF exposure limit.

We believe that this proposal makes sense for frequency bands above 10 MHz. However, on frequency bands below 10 MHz, persons are more likely to be located in the "near-field" of the amateur station antenna, where the field strength can vary dramatically in a very short distance.

The near-field of an antenna generally extends out to a distance of $2L^2/\lambda$ from the antenna, where L is the effective length of the antenna and λ is the wavelength of the signal. For a typical amateur station using a half-wave dipole and operating on 10.125 MHz, the near field would extend out to points approximately 15 meters from the antenna. As the frequency decreases below 10 MHz, the size of the near-field increases (provided the effective length of the antenna is maintained.) As frequency increases above 10 MHz, the size of the near-field decreases.

In addition, a simple scaling of the power threshold to match the RF exposure limit below 10 MHz would result in extremely high-powered operations being permitted without any routine environmental evaluation. We believe that a flat 500-watt power threshold below 10 MHz is necessary to ensure that these high-powered amateur stations do not cause human exposure to excessive RF electromagnetic fields. Accordingly, we are adopting the ARRL's proposal by specifying a transmitter power threshold for each individual ARS frequency band.

As indicated in the table shown in Section 97.13(c) of the revised rules, the power threshold for transmissions in the frequency bands below 10 MHz is 500 watts. We have also established this threshold for amateur repeater stations, which are normally located high above ground level and often at commercial sites, and we will base exclusions for these antennas on factors similar to those for paging and cellular antennas, as shown in the revised table, since their operation is similar. For frequency bands above 10 MHz, the power threshold varies from 50 watts to 450 watts.

We believe the revised power thresholds for the ARS will eliminate burdensome and unnecessary requirements for most radio amateurs, and thus address the overall concerns raised by the ARRL and Mr. Dixon. These new thresholds, as well as some clarifying language we have added to Section § 97.13(c), also help protect the public from excessive exposure to RF electromagnetic fields produced by ARS stations by requiring that their licensees perform routine environmental evaluations and take appropriate actions if they operate their station in a manner that could cause human exposure to RF electromagnetic fields above that permitted under our guidelines. [End Quote]

Part 97 - AMATEUR RADIO SERVICE

Section § 97.13 is amended by revising paragraph (c) and adding paragraphs (c)(1) and (c)(2) to read as follows:

§ 97.13 Restrictions on station location.

* * * * *

(c) Before causing or allowing an amateur station to transmit from any place where the operation of the station could cause human exposure to RF electromagnetic field levels in excess of those allowed under Section § 1.1310 of this chapter, the licensee is required to take certain actions.

(1) The licensee must perform the routine RF environmental evaluation prescribed by § 1.1307(b) of this chapter, if the transmitter PEP exceeds the following limits:

TRANSMITTER PEP THRESHOLD POWER LIMITS

Wavelength Band		Transmitter Power (Watts)
MF		
160 meters (1800-2000 kHz)		500 Watts PEP
HF		
80 meters	(3.50-3.75 MHz)	500 Watts PEP
75 meters	(3.75-4.00 MHz)	500 Watts PEP
40 meters	(7.0-7.3 MHz)	500 Watts PEP
30 meters	(10.10-10.15 MHz)	425 Watts PEP
20 meters	(14.00-14.35 MHz)	225 Watts PEP
17 meters	(18.068-18.168 MHz)	125 Watts PEP

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Wavelength Band	Transmitter Power (Watts)
15 meters (21.00-21.45 MHz)	100 Watts PEP
12 meters (24.89-24.99 MHz)	75 Watts PEP
10 meters (28.0-29.7 MHz)	50 Watts PEP
VHF	
6, 2, 1¼ meters (All bands)	50 Watts PEP
UHF	
70 cm (420-450 MHz)	70 Watts PEP
33 cm (902-928 MHz)	150 Watts PEP
23 cm (1240-1300 MHz)	200 Watts PEP
13 cm (2300-2450 MHz)	250 Watts PEP
SHF	
All 1.2 cm - 9 cm bands	250 Watts PEP
EHF	
All 6 mm and shorter bands	250 Watts PEP

(2) If the routine environmental evaluation indicates that the RF electromagnetic fields could exceed the limits contained in § 1.1310 of this chapter in accessible areas, the licensee must take action to prevent human exposure to such RF electromagnetic fields.

Further information on evaluating compliance with these limits can be found in the FCC's OET Bulletin 65, "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields." [End of new Part 97 Rules]

Development of Revised OET Bulletin 65

Since 1985, the FCC has made available a technical publication designed for use by licensees as an aid in evaluating compliance with the Commission's exposure guidelines. This publication has now been updated to reflect the new guidelines.

In September, 1996, a draft of the revised Bulletin 65 was sent to several outside reviewers for comment and suggestions. (W5YI was one of those who reviewed the publication.) Follows are some excerpts from OET Bulletin No. 65 as applies to the Amateur Radio Service. [Again, these are verbatim quotes from the bulletin.]

Operations in the Amateur Radio Service

In the FCC's recent Report and Order, certain amateur radio installations were made subject to routine evaluation for compliance with the FCC's RF exposure guidelines. Also, amateur licensees will be expected to demonstrate their knowledge of the FCC guidelines through examinations. Applicants for new licenses and renewals also will be required to demonstrate that they have read and that they understand the applicable rules regarding RF exposure. Before causing or allowing an amateur station to transmit from any place where the operation of the station could cause human exposure to RF radiation levels in excess of the FCC guidelines ama-

teur licensees are now required to take certain actions.

A routine RF radiation evaluation is required if the transmitter power of the station exceeds the levels shown in Table 1 and specified in 47 CFR § 97.13(c)(1). Otherwise the operation is categorically excluded from routine RF radiation evaluation, except as a result of a specific motion or petition as specified in Sections 1.1307(c) and (d) of the FCC's Rules. [Note: This section provides an appeal procedure whereby complainants may petition the Government in specific cases - even though the transmitting station may be categorically excluded from routine evaluation.] These levels were chosen to roughly parallel the frequency of the MPE limits of Table 1 in Appendix A.

The Commission's Report and Order instituted a requirement that operator license examination question pools will include questions concerning RF safety at amateur stations. An additional five questions on RF safety will be required within each of three written examination elements. The Commission also adopted the proposal of the American Radio Relay League (ARRL) that amateur operators should be required to certify, as part of their license application process, that they have read and understand our bulletins and the relevant FCC rules.

When routine evaluation of an amateur station indicates that exposure to RF fields could be in excess of the exposure limits specified by the FCC, the licensee must take action to correct the problem and ensure compliance. Such actions could be in the form of modifying patterns of operation, relocating antennas, revising a station's technical parameters such as frequency, power or emission type or combinations of these and other remedies.

In complying with the Commission's Report and Order, amateur operators should follow a policy of systematic avoidance of excessive RF exposure. The Commission has said that it will continue to rely upon amateur operators, in constructing and operating their stations, to take steps to ensure that their stations comply with the MPE limits for both occupational/controlled and general public/uncontrolled situations, as appropriate. In that regard, amateur radio operators and members of their immediate household are considered to be in a "controlled environment" and are subject to the occupational/controlled MPE limits. Neighbors who are not members of an amateur operator's household are considered to be members of the general public, since they cannot reasonably be expected to exercise control over their exposure. In those cases general population/uncontrolled exposure MPE limits will apply.

In order to qualify for use of the occupational/controlled exposure criteria, appropriate restrictions on access to high RF field areas must be maintained and educational instruction in RF safety must be provided to individuals who are members of the amateur operator's

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household. Persons who are not members of the amateur operator's household but who are present temporarily on an amateur operator's property may also be considered to fall under the occupational/controlled designation provided that appropriate information is provided them about RF exposure potential if transmitters are in operation and such persons are exposed in excess of the general population/uncontrolled limits.

Amateur radio facilities represent a special case for determining exposure, since there are many possible antenna types that could be designed and used for amateur stations. However, several relevant points can be made with respect to analyzing amateur radio antennas for potential exposure that should be helpful to amateur operators in performing evaluations.

First of all, the generic equations described in this bulletin can be used for analyzing fields due to almost all antennas, although the resulting estimates for power density may be overly-conservative in some cases. Nonetheless, for general radiators and for aperture antennas, if the user is knowledgeable about antenna gain, frequency, power and other relevant factors, the equations in this section can be used to estimate field strength and power density as described earlier.

In addition, other resources are available to amateur radio operators for analyzing fields near their antennas. The ARRL *Radio Amateur Handbook* contains an excellent section on analyzing amateur radio facilities for compliance with RF guidelines. Also, the FCC and the EPA conducted a study of several amateur radio stations in 1990 that provides a great deal of measurement data for many types of antennas commonly used by amateur operators.

Amateur radio organizations and licensees are encouraged to develop their own more detailed evaluation models and methods for typical antenna configurations and power/frequency combinations. The FCC is working with the amateur radio community to develop a supplement to this bulletin that will be designed specifically for evaluating amateur radio installations.

For example, the supplement will contain information on projected minimum exclusion distances from typical amateur antenna installations. The supplement should be completed soon after release of this bulletin. Once the amateur radio supplement is released by the FCC it will be made available for downloading at the FCC's World Wide Web Site for "RF safety."

Amateur radio applicants and licensees are encouraged to monitor the Web Site for release of the supplement. The address is: www.fcc.gov/oet/rfsafety. Information on availability of the supplement, as well as other RF-related questions, can be directed to the FCC's "RF Safety Program" at: (202) 418-2464 or to: rfsafety@fcc.gov. [End of Quote from OET Bulletin 65]

[Follows are the Part 1 rules that give the MPE formulas.]

§ 1.1310 Radiofrequency radiation exposure limits.

The criteria listed in table 1 shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in § 1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of § 2.1093 of this chapter. [Sec. § 1307(b) states that a 'determination of compliance' is necessary unless categorically excluded. Evaluation is required if transmitter output exceeds levels specified in newly revised Sec. § 97.13(c)(1). Sec. § 2.1093 categorically excludes Part 97 Amateur hand-held transceivers from routine evaluation.]

Table 1. LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

(A) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz *Plane-wave equivalent power density

NOTE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.